## CUMMINS INC.

EXECUTIVE ORDER U-R-002-0728

New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in California Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-19-095:

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)		
2020	LCEXL03.8AAF	3.8	Diesel	8000		
SPECIAL	FEATURES & EMISSION	CONTROL SYSTEMS	TYPICAL EQUIPMENT	APPLICATION		
Electronic Direct Injection, Turbocharger, Charge Air Cooler, Electronic Control Module, Diesel Particulate Filter, Diesel Oxidation Catalyst, Selective Catalytic Reduction – Urea, Ammonia Oxidation Catalyst			Crane, Loader, Tractor, Pump, Dozer, Compressor, Generato Set			

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for non-methane hydrocarbon (NMHC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)				OPACITY (%)			
CLASS			NMHC	NOx	NMHC+NOx	со	PM	ACCEL	LUG	PEAK
75 ≤ kW < 130	Tier 4 Final	STD	0.19	0.40	N/A	5.0	0.02	N/A	N/A	N/A
		CERT	0.007	0.14		0.01	0.01		-	÷

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this

Allen Lyons, Chief

**Emissions Certification and Compliance Division** 

day of August 2019.

EO #: U-R-002-0728

Attachment: Page 10f1

1/21/2019

Engine Model 2

1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4,Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torqu	9.Emission Control
5342:FR95676	QSF3.8 .	173@2500	120.9	61.7	457@1500	139	44.1	ECM, DOC, TC,DOC,
								DPF,SCR.A8C
5342:FR95677	QSF3.8	154@2500	128.5	53.4	457@1500	139	44.1	ECM, DDC, TC, DOC
					Control of			DPF, SCR, ASC
5342:FR96378	QSF3.8	148@2500	110.2	51.4	443@1500	133	41.9	ECM, DEC, TC,DOC,
				4				DPF, SCR, ASC
5342:FR95678	QSF3.8	134@2500	100.6	47.0	406@1500	120	38.8	ECM, DOC, TC, DOC
		:						DPP, SCR, ASC
5342:FR95679	Q\$F3.8	121@2500	95.4	42.3	369@1500	107	35.1	ECM, DDC, TC, DOC
			, k					DPF, SOR, ASC
5342:FR95680	QSF3.8	101@2500	97.7	. 39.0	369@1500	107	35.1	ECM, DEC, TC, DOC
								DPF, SER, ASC
5342:FR95682	QSF3.8	154@2200	126.5	53.4	457@1500	139	44.1	ECM, DOC, TC, DOC
								DPF, SCK, ASC
5342:FR96379	QSF3.8	148@2200	110.2	51.4	443@1500	133	41.9	ECM, DEC, TC,EGR,
								DOC, DPF, SOR, ASO
5342:FR95683	QSF3,8	134@2200	. 100.8	47.0	406@1500	120	38.8	ECM, DOC, TC, DOC
•								DPF, SER, ASC
5342:FR95684	QSE3.8	121@2200	95.4	42.3	369@1500	107	35.1	ECM, DOC, TC, DOC.
								OPF, SOR, ASC
5342:FR95685	QSF3.8	101@2200	101.1	38.1	369@1500	107	35.1	ECM, DEC, TC, DOC, DPF, SCR, ASC
	5342:FR95677  5342:FR95678  5342:FR95678  5342:FR95679  5342:FR95680  5342:FR95682  5342:FR95682  5342:FR956883	5342:FR95677 QSF3.8  5342:FR96378 QSF3.8  5342:FR95678 QSF3.8  5342:FR95679 QSF3.8  5342:FR95680 QSF3.8  5342:FR95682 QSF3.8  5342:FR95682 QSF3.8  5342:FR95684 QSF3.8	1.Engine Code 2.Engine Model (SAE Gross) 5342:FR95676 QSF3.8 173@2500 5342:FR95677 QSF3.8 154@2500 5342:FR96378 QSF3.8 148@2500 5342:FR95678 QSF3.8 121@2500 5342:FR95680 QSF3.8 101@2600 5342:FR95682 QSF3.8 164@2200 5342:FR95683 QSF3.8 148@2200 5342:FR95684 QSF3.8 134@2200	1.Engine Code         2.Engine Model         3.BHP@RPM (SAE Gross)         mm/stroke @ peak HP (for diseased only)           5342:FR95676         QSF3.8         173@2500         120.9           5342:FR95677         QSF3.8         154@2500         128.5           5342:FR96378         QSF3.8         148@2500         110.2           5342:FR95678         QSF3.8         134@2500         100.8           5342:FR95679         QSF3.8         121@2500         95.4           5342:FR95680         QSF3.8         101@2500         97.7           5342:FR95682         QSF3.8         154@2200         128.5           5342:FR95683         QSF3.8         148@2200         100.8           5342:FR95684         QSF3.8         134@2200         100.8	1.Engine Code 2.Engine Model (SAE Gross) mm/stroke @ peak HP (bs/hr) @ peak HP (for diesels only) (for diese	1.Engine Code         2.Engine Model         3.BHP@RPM (SAE Gross)         mm/stroke @ peak HP (for diseas only)         (bshr) @ peak HP (for diseas only)         6.Torque @ RPM (SAE Gross)           5342:FR95676         QSF3.8         173@2500         120.9         61.7         457@1500           5342:FR95677         QSF3.8         154@2500         128.5         53.4         457@1500           5342:FR96378         QSF3.8         148@2500         110.2         51.4         443@1500           5342:FR95678         QSF3.8         134@2500         100.8         47.0         406@1600           5342:FR95689         QSF3.8         121@2500         95.4         42.3         369@1500           5342:FR95682         QSF3.8         164@2200         128.5         53.4         457@1500           5342:FR96889         QSF3.8         164@2200         128.5         53.4         457@1500           5342:FR96889         QSF3.8         146@2200         128.5         53.4         457@1500           5342:FR96889         QSF3.8         146@2200         100.8         47.0         406@1500           5342:FR95684         QSF3.8         124@2200         100.8         47.0         406@1500           5342:FR95684         QSF3.8 <t< td=""><td>  1.Engine Code   2.Engine Model   3.8HP@RPM   (SAE Gross)   (for disset ority)   (for disset</td><td>  1.Engine Code   2.Engine Mode   3.HP@RPM (SAE Gross)</td></t<>	1.Engine Code   2.Engine Model   3.8HP@RPM   (SAE Gross)   (for disset ority)   (for disset	1.Engine Code   2.Engine Mode   3.HP@RPM (SAE Gross)

S CR-U, A MOX BOIICAC